



Preliminary Close Out Report  
Winthrop Landfill Superfund Site  
Winthrop, Maine

September, 1997

Superfund Records Center  
SITE: Winthrop 1d1  
BREAK: 8-3  
OTHER: 261825

## I. Introduction

This Preliminary Close Out Report documents that the U.S. Environmental Protection Agency (EPA) has completed all construction activities for the Winthrop Landfill Superfund Site ("the Site") in accordance with Procedures for Completion and Deletion of National Priorities List Sites and Update (OSWER Directive 9320.2-3C) and in accordance with the National Contingency Plan (NCP). The Maine Department of Environmental Protection (ME DEP) and EPA conducted final inspections of the Site on October 24, 1996 and determined that the potentially responsible parties' (PRP) contractors have constructed the remedy in accordance with remedial design (RD) plans and specifications approved by ME DEP and EPA. This determination was discussed with the PRPs and no further construction is required by the Consent Decree. Activities necessary to achieve performance standards and site completion are underway.

## II. Summary of Site Conditions

### Background

The Winthrop Landfill Superfund Site ("the Site"), formerly a hazardous waste disposal site, covers approximately 20 acres along the western shore of Annabessacook Lake in the Town of Winthrop, Kennebec County, Maine. The Site was first excavated in the 1920's as a sand and gravel pit, then used for residential and industrial waste disposal from 1930 to 1982. In 1980, volatile organic compounds (VOCs) were detected in a residential well south of the landfill. In 1981, the EPA added the Site to its National Priorities List (NPL).

The Remedial Investigation/Feasibility Study (RI/FS) was conducted from 1981 to 1985. The RI determined that liquid chemical wastes were migrating from the landfill in shallow and deep groundwater in three separate flows. One deep residential well was found to be contaminated, with potential for there to also be contamination in other wells in the area. Low concentrations of organic contaminants were found in lake sediments south of the landfill and organic contaminants were detected in groundwater within the bedrock trough (a depression in the bedrock) beneath the Site.

When the Remedial Design was selected in 1985, there were approximately 21 homes in proximity of the landfill. Concern was expressed over potential impacts of the landfill upon an 11.5-

acre sphagnum bog to the east of the site, a six-acre cattail marsh to the north of the site, and Annabessacook Lake, a recreational lake which also provides backup municipal water supplies for the City of Augusta, Maine.

### **Remedial Construction Activities**

The Superfund Enforcement Decision Document (ROD) was issued on November 22, 1985. Based on this ROD, a Consent Decree was entered on March 23, 1986, among EPA, ME DEP, Inmont Corporation, Town of Winthrop, Maine, Everett Savage and Glenda Savage. Through a succession of purchases, Inmont's obligations are currently being fulfilled by United Technologies Corporation, Inc. (UTC). The Town of Winthrop and the Savages granted access to their properties. The Site is currently PRP-lead.

In summary, the selected remedy for the Site included:

- the extension of an alternate water supply to area residents;
- construction of a chain link fence around the landfill and imposition of deed restrictions prohibiting use of the landfill for activities other than the remedial action;
- prohibition of groundwater withdrawal for purposes other than remedial action;
- prohibition of excavation within the landfill, except for residential construction or remedial action;
- quarterly sampling of monitoring points in sensitive areas;
- grading and placement of a RCRA cap over the entire landfill;
- completion of engineering design work (geologic, hydrogeologic, treatability pilot studies);
- and the establishment of an Alternate Concentration Limit (ACL) for each contaminant in groundwater.

If the ACLs are exceeded, the ROD provides for the installation and operation of a groundwater extraction and treatment system.

Installation of a permanent water supply to residents was completed in 1984. On October 9, 1985, the Town of Winthrop enacted an ordinance to prohibit groundwater withdrawal and to prohibit all groundwater use and excavation within the site. This ordinance was revised April 3, 1991, to include additional areas utilized by the PRPs during remediation, and to provide further excavation control in areas potentially impacted by landfill gas migration.

Implementation of a monitoring program which requires, at a minimum, sampling on a quarterly basis of chemicals of concern, began on May 23, 1986. Quarterly monitoring of groundwater, surface water, and sediment has been ongoing since that time, and the monitoring program has been revised as necessary.

Implementation of engineering studies (Seismic and Topographic Surveys, Sediment Sampling and Analysis, Hydrogeologic Investigation, Treatability Studies, and Wetland and Floodplain Mitigation) have all been completed.

Cap design began in March 1986 and was completed with the approval of the Remedial Action Work Plan submitted on November 19, 1986. Cap construction was completed in September 1987 except for one area of slope failure. The vegetative layer was complete October 1, 1987, and fence installation was completed October 21, 1987. In April, 1989, PRPs began investigating the area of slope failure and determined that slippage occurred because the ground around a nearby bog was weaker than expected and it could not adequately support the weight of the cap. Slope reconstruction was completed in November, 1989, in accordance with construction plans and specifications approved by EPA and ME DEP. EPA approved the cap on June 23, 1992.

Post-closure monitoring of the cap has continued. Settlement of the landfill cap was again reported to EPA and ME DEP in July, 1994, and the PRPs made repairs as necessary. The PRPs continue to make repairs, however, ongoing divots and depressions occur because of operation of a vapor extraction system (see below). The PRPs are currently working with EPA/ME DEP on a plan to fill all depressions and divots caused by the VES system, which is expected to involve less than one truckload of topsoil.

The PRPs submitted an ACL Demonstration Report on April 15, 1992. EPA and ME DEP disapproved all proposed ACLs. On September 25, 1992, the PRPs submitted a revised ACL Demonstration Report that EPA and ME DEP accepted in a Decision Document signed March 10, 1993.

Design of a Groundwater Treatment and Extraction System (GWETS) was ongoing during the design and implementation of ACLs. After the determination that a GWETS system would be necessary, formal design plans were submitted to EPA and ME DEP. EPA and ME DEP conditionally approved a 100% design report on April 28, 1994 and construction began shortly thereafter.

Operation of the GWETS began in March, 1995, and must continue until cleanup standards are achieved in groundwater outside the landfill boundary. Three extraction wells and three re-injection wells, including all necessary underground piping, were placed at the site and an on-site treatment plant building was constructed. In December 1995, a recharge trench was installed to supplement the system, and another re-injection well was reconstructed in June 1996. Ongoing maintenance and upgrading of the system has occurred as necessary, and on January 27, 1997, the PRPs closed their subcontract for construction and one-year operation of the GWETS.

The PRPs are currently working with EPA/ME DEP to plan the installation of a fourth extraction well in October 1997 at an identified hot spot on the landfill. It is expected that installation shall take one week, with another few weeks of testing prior to a full connection to the GWETS. Installation of this extraction well is above and beyond the design requirements; the PRPs are conducting this work on a voluntary basis only in an attempt to expedite clean-up and allow them to shut down the GWETS sooner than currently anticipated.

The PRPs also investigated the use of a VES to supplement any groundwater treatment. Soil and gas analyses showed that residual VOCs remained within soils and refuse above the water table. Studies indicated that removal of the VOCs above the water table was possible, and that inclusion of the VES component should reduce the GWETS operation time. The PRPs submitted a VES Final Design in August 1993, and on October 20, 1993, EPA documented the inclusion of a vapor extraction system (VES) in an Explanation of Significant Differences.

The full-scale VES design consists of 42 vapor extraction wells installed in refuse material and 32 vapor extraction wells installed in natural soils above the groundwater table. A separate VES treatment building was installed on-site and includes two treatment technologies: a thermal oxidizer treated methane during the first 100 days of initial operations, and VOCs continue to be treated by carbon filtration.

In October, 1993, PRPs began installation of the vapor extraction wells, manifold pipe network and the VES building. VES process equipment was installed during the Summer of 1994 and the system was started in October of 1994. The system currently removes about 2500 pounds per year of contaminant mass.

Contamination from the Site entered Annabessacook Lake and accumulated to sufficient quantities to cause an exceedance of Protective Concentration Limits (PCLs) for arsenic in sediment. In October 1996, UTC excavated and filled most of the sediment and they continue to monitor this area as part of its ongoing program. A similar exceedance is present in one area of nearby Hoyt Brook. Remediation is expected to occur in Fall 1997 or Spring 1998, but the scope of this remediation will be much less intensive (i.e., use of a hand-trowel and wheelbarrow to excavate, drain, and contain less than one drum of material).

### **III. Demonstration of Cleanup Activity Quality Assurance and Quality Control**

All work performed at the Site was consistent with the ROD, ESD, and all final design reports. Final designs contained construction quality assurance programs to verify that the work

met the ROD and design requirements. EPA staff and its oversight contractor, as well as ME DEP staff, performed oversight of all construction activities and design of monitoring programs and the ACLs.

All sampling is implemented using EPA, ME DEP, or other standard practices, and all performance data was regularly reviewed by EPA, EPA's oversight contractor, and ME DEP. All construction and performance data to date are acceptable and no additional construction activities are required by the ROD. EPA and ME DEP will continue to review all performance data.

All quality assurance material is available at the EPA Region I Records Center in Boston, MA. QA/QC programs used throughout RD/RA were sufficiently rigorous and adequately complied with to enable EPA and ME DEP to determine that the results reported are accurate to the degree needed to assure satisfactory execution of the RD/RA consistent with the ROD, ESD, and all design plans and specifications.

The ROD provided for numerous actions, all of which were covered under one operable unit (OU) only. EPA's older tracking systems utilized in the 1980's did not allow for phasing of a remedy under one OU to track accomplishments. At that time, the remedy was divided into three OU's to allow for easier tracking of the different phases of the remedy, including the cap, the ACLs, and the GWETS/VES systems. The definitions of accomplishments have also been changed over the last 12 years, which also causes some discrepancies in the current tracking system.

#### **IV. Activities and Schedule for Site Completion**

The Remedial Action activities that remain to be completed for the Winthrop Landfill Superfund Site include an operational and functional period for the GWETS/VES systems, remediation of the Hoyt Brook sediment seep and continuing ongoing monitoring, preparing the Final Close Out Report, and preparing the Site for deletion from the NPL. Assuming the operational & functional period for groundwater treatment lasts a full 10 years, Remedial Action Complete would occur by the year 2007. (In 1994, the PRPs expected that groundwater cleanup would take 5-15 years.)

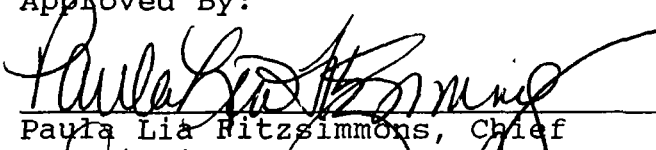
Ongoing post-closure monitoring of the cap and quarterly monitoring of groundwater, surface water, and sediments will continue throughout the O&M period until site deletion.

Task	Estimated Completion Date	Responsible Organization
Groundwater Extraction & Treatment System/Vapor Extraction System Operational & Functional START	9/1997	EPA/ME DEP Oversight
Groundwater Extraction & Treatment System/Vapor Extraction System Operational & Functional COMPLETE and START of Long-Term Response	9/1998	EPA/ME DEP Oversight of PRPs
Long-Term Response COMPLETE/ Approved Remedial Action Report	2008	EPA
START of Operations & Maintenance	2008	EPA/ME DEP
Operations & Maintenance COMPLETE/ Approved Final Close Out Report	2024	EPA
Deletion from National Priority List	2024	EPA/ME DEP

#### V. Five-Year Review

Hazardous substances will remain at the Site above health-based levels after the completion of the remedial action. Pursuant to the CERCLA section 121 and as provided in OSWER Directive 9355.7-02, Structure and Components of Five-Year Reviews, May 23, 1991, and OSWER Directive 9355.702A, Supplemental Five-Year Review Guidance, July 26, 1994, EPA must conduct a statutory five-year review. The first five year review was conducted October 10, 1992. The second five year review is expected to be completed by September 30, 1997.

Approved By:

  
Paula Lia Ritzsimmons, Chief  
Remediation and Restoration II Branch

  
Date

## VI. Bibliography

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Winthrop Landfill, ME  
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Winthrop Landfill Superfund Site  
March 23, 1986

Remedial Action Work Plan  
Winthrop Landfill  
E.C. Jordan Company for United Technologies Corporation  
November 19, 1986

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Task II-8 Alternate Concentration Limit Demonstration  
Winthrop Landfill  
ABB Environmental Services, Inc. for United Technologies Corp.  
April 15, 1992.

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Winthrop Landfill  
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Decision Document  
Winthrop Landfill Superfund Site, Alternate Concentration Limit  
March 10, 1993

Version 1.0 - Soil Vapor Extraction System Final Design  
VAPEX for United Technologies Corp.  
August 1993

Explanation of Significant Differences  
Vapor Extraction System  
Winthrop Landfill Superfund Site  
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